

12-2009

A Conceptual Model for Evaluating e-Business Capability and Value for Fast Growth Small-to-Medium Enterprises

Rui Bi

School of Management, RMIT University, rui.bi@rmit.edu.au

Kosmas X. Smyrniotis

School of Management, RMIT University, kosmas.smyrniotis@rmit.edu.au

Follow this and additional works at: <http://aisel.aisnet.org/acis2009>

Recommended Citation

Bi, Rui and Smyrniotis, Kosmas X., "A Conceptual Model for Evaluating e-Business Capability and Value for Fast Growth Small-to-Medium Enterprises" (2009). *ACIS 2009 Proceedings*. 76.
<http://aisel.aisnet.org/acis2009/76>

This material is brought to you by the Australasian (ACIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ACIS 2009 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

A Conceptual Model for Evaluating e-Business Capability and Value for Fast Growth Small-to-Medium Enterprises

Rui Bi &
Kosmas X. Smyrnios
School of Management
RMIT University
Melbourne, Australia
Email: rui.bi@rmit.edu.au
Email: kosmas.smyrnios@rmit.edu.au

Abstract

This paper develops an integrative research model of drivers of e-business capability and e-business value. Technology-organization-environment (TOE) framework, resource-based view (RBV), and dynamic capability (DC) theories underpin this research. Unlike traditional studies focusing on technology adoption, we concentrate on post-adoption of e-business technology. In this research-in-progress, we build a theoretical model to be tested using structural equation modelling on a dataset of 250 fast growth small-to-medium enterprises (SMEs) across different industrial sectors. This research has important implications in regard to sources of competitive advantage, dynamic positional advantage, and firm performance.

Keywords

e-business capability, e-business value, technology-organization-environment framework, resource-based view, dynamic capability.

INTRODUCTION

Firms are increasingly incorporating e-business into their existing information system (IS) applications and business processes, and utilizing internet-based technologies for doing business with trading partners (Kowtha et al. 2001; Teo et al. 2006; Yang et al. 2005). Undertaking e-business and developing e-business capability is important because it enables organizations to speed up transactions between firms and their suppliers and customers, and it has also become an integral part of firms' business strategies (Abu-Musa 2004; Lin et al. 2008). Doing e-business enables firms to execute electronic transactions along value chain activities, achieve real-time communication, lower transaction costs, enhance speed and flexibility, and ultimately improve firm performance (Lee et al. 2001; Oh et al. 2007; Zhu et al. 2004).

In recent times, a growing interest in e-business adoption, use, and value has emerged in the IS (Soto-Acosta et al. 2008; Zhu 2004; Zhu et al. 2005), strategic management (Devaraj et al. 2003; Kearns et al. 2006; Ravinchandran et al. 2005; Wu et al. 2003), and production and operation management fields (Banker et al. 2006; Chen et al. 2007; Devaraj et al. 2007; Sanders 2007). This research has drawn upon theoretical conceptualizations utilizing the TOE, RBV and DC theories. A further distinguish feature is to develop and test of theoretical models focusing on the relationships between IS, marketing, operational management and performance.

Based on an in depth reviews of literature on this topic, five gaps are identified: reliance on case study approaches, lack of theoretical drivers, need better understanding of post-adoption of technology, limited research work on measuring e-business capability and value, and need good understanding of SMEs about e-business issues. The detailed information is discussed as follows.

First, research on e-business relies heavily on case studies of small samples of organizations, with limited empirical data to measure e-business initiatives or to gauge the scale and characteristics of e-business and its impact on firm performance (Kauffman et al. Summer 2001; Lin et al. 2008; Zhu et al. 2004). This limitation can be attributed partly to difficulties associated with developing measures and collecting data (Zhu 2004).

Second, lack of theory to guide empirical work is a fundamental issue in previous research (Wheeler 2002) and a need for conceptual development is necessary (Straub et al. 2002; Zhu et al. 2004). More research using unifying theory-based frameworks is essential to assess the economic impact of e-business (Chan 2000; Ives 1994; Santhanam et al. 2003).

Third, there is a need to understand better post-adoption variations in e-business usage and value. Although research (Bharadwaj 2000; Ravinchandran et al. 2005; Zhu et al. 2005) suggests that e-business adoption and use affect firm performance, the overall extent to which e-business relating to performance still remains under-examined in both IS and management literature.

Fourth, there is a dearth of research (Soto-Acosta et al. 2008; Zhu 2004; Zhu et al. 2005) evaluating e-business capability; and relationships between e-business capability, value creation, and performance. Ravinchandran & Lertwongsatien (2005) suggested that IS research is fragmented and limited work has been undertaken to discuss effects of complementarities between resources and capabilities on firm performance.

Finally, it is noteworthy that SMEs, a major part of industrial economics, have not been targeted in e-business related studies. Accordingly, the benefits SMEs derive from e-business is far from conclusive (Elia et al. 2007; Raymond et al. 2008).

To address these knowledge gaps, the present study has four principle aims. The primary objective of this study is to develop and test an integrative research model for assessing e-business capability and outcomes of e-business value at the SMEs level. Second, this study aims to identify a comprehensive set of determinants of firm e-business capability from a technological, organizational, and environmental perspective; and to evaluate the extent to which these three elements contribute to e-business value. Third, this study aims to determine whether e-business capability is a higher-order construct consisting of four dimensions: communication, transaction, activity integration and responsiveness, from which e-business value is created. Finally, this investigation aims to determine the effects of e-business value on business performance from sales, operational efficiency, and relationship development perspectives.

We pursue three key research questions. First, within TOE, RBV, and DC theoretical frameworks, what factors can be identified as key antecedents of e-business capability and value? Second, does e-business capability lead to e-business value as measured by sales performance, operational efficiency, and relationship development? Third, does e-business capability mediate the relationship between TOE factors and e-business value?

LITERATURE REVIEW AND FORMULATION OF HYPOTHESES

Theoretical Conceptualization

Technology-Organization-Environment (TOE) Framework

Tornatzky and Fleischer (1990) developed a conceptualization framework incorporating three principle contextual elements: technology, organization and environment (TOE) to explain process by which firms adopt, implement, and employ technological innovations. *Technology context* describes both internal and external technologies relevant to firms, including existing technologies and the pool of available technologies in the market. *Organizational context* is defined in terms of firm size and scope; centralization, formalization and complexity of managerial structures; quality of human resources; and extent of available internal slack resources. *Environmental context* relates to the arena within which firms conduct business: industry sector, competitors, and access to resources. The Tornatzky and Fleischer's model has been adopted to a number of IS domains, such as electronic data interchange (EDI), open systems and material requirement planning (MRP) (Chau et al. 1997; Iacovou et al. 1995; Kuan et al. 2001; Thong 1999).

The TOE framework is an appropriate conceptual driver for this research because e-business capability is enhanced by technological development, driven by organizational characteristics, and influenced by environmental factors (Zhu et al. 2002). Zhu et al. (2004), Zhu and Kraemer (2005) developed a perception-based TOE framework to explain important determinants of e-business use and e-business value outcomes. More recently, Lin and Lin (2008) employed the TOE framework to study e-business diffusion.

Resource-based View (RBV) theory

Rooted in strategic management theory (Barney 1986; Barney 1991), RBV proposes that firms have capacity to possess resource enabling achievement of competitive advantage, and superior long-term performance. The RBV framework proposes that resources need to exhibit particular attributes: valuable, rare, inimitable and non-substitutable (VRIN) by rivals in order to achieve and sustain a competitive advantage (Barney 1991; Wernerfelt 1984). RBV extends our understanding of ways in which firms succeed and achieve a sustainable competitive advantage through treatment of resources and capabilities as central considerations in strategy formulation and as primary sources of profitability (Kearns 1997). Firms owning bundles of costly-to-imitate resources/capabilities demonstrate superior performance (Helleloid & Simonin 1994; Reed & Defillippi 1990).

RBV differentiates distinctly between resources and capabilities. First, while resources are used by firms to create, produce, and/or offer products (goods or services) to a market, capabilities are developed and emerge from resources that are employed in repeatable patterns to create, produce, and/or offer products to market (Sanchez et al. 1996; Wade et al. 2004). Second, resources are generally regarded as inputs or outputs of organizational processes, but are unable to be embedded within organizations and their processes (Makadok 2001; Srivastava et al. 1998; Teece et al. 1997; Wade et al. 2004). Capabilities are firm-specific and embedded in organizational processes and routines (Amit et al. 1993; Makadok 2001; Wade et al. 2004), transforming inputs into outputs to generate value (Amit et al. 1993; Makadok 2001; Wade et al. 2004). Thus, capabilities are viewed as incorporating reliable services, repeated processes, product innovations, manufacturing flexibility, responsiveness to market trends, and short product development cycles (Amit et al. 1993).

IS researchers (Bharadwaj 2000; Ravinchandran et al. 2005; Wade et al. 2004) use RBV to explain how firms can create competitive value from IT resources/capabilities, and how organizations gain sustainable value which resides more in organization's skills rather in technology itself by leveraging IT. RBV literature conceptualizes resource complementarity in two ways to address IT-related benefits to firms (Clemons et al. 1991; Mata et al. 1995; Powell et al. 1997). On the one hand, resource complementarity *represents an enhancement of resource value, and arises when a resource produces greater returns in the presence of another resource than it does alone* (Powell et al. 1997, p. 379). On the other hand, resource complementary depends on firm's decision about how resources/capabilities are channelled and utilized (Ravinchandran et al. 2005). RBV suggests resource complementarities enhance the value of resources (Barney 1991). Consistent with RBV, IS research (Bharadwaj 2000; Powell et al. 1997; Ravinchandran et al. 2005) posit that IT per se does not provide distinctive advantages and firms should leverage IT with other organizational resources and skills as complementarities to produce sustainable performance advantages.

Dynamic capability (DC) theory

RBV is criticized on the grounds of being static and not adequately explaining how firms transform resources and capability to gain competitive advantage in situations of rapid and unpredictable market change (Eisenhardt et al. 2000; Priem et al. 2001a; Priem et al. 2001b). Thus, strategic management research (Eisenhardt et al. 2000; Teece et al. 1997) regards DC as an integral component of RBV, helping to understand better realities of market dynamism and rapid technological change. DC involving evolutionary nature of resources and capabilities helps managers to change and reconfigure organizational resources to generate new value-creating strategies (Eisenhardt et al. 2000; Wang et al. 2007). Teece, Pisano, and Shuen (1997) defined DC as an ability to achieve new forms of competitive advantage by renewing resources from technology, organization, and manage perspectives to achieve congruence with the changing business environment when time-to-market is critical, technology change rate is rapid, and nature of future competition and markets are difficult to determined. Eisenhardt and Martin (2000, p. 1107) defined DC narrowly as *firm's processes that use resources - specifically the processes to integrate, reconfigure, gain and release resources - to match and even create market change*. Wang and Ahmed (2007, p. 35) argued that DC is *not a simply process but embedded in process* and it is a ultimate organizational capability conducting to achieve long-term performance to attain and sustain competitive advantage. These capabilities have change-oriented and dynamic features, helping firms to reconfigure their resources to meet evolving customer demands and competitor changes (Zhu et al. 2002).

Recent IS empirical research has used DC to understand a firm's ability to create value by using IT-related technology and reconfiguring organizational resources. Wheeler (2002) used DC to understand how firms use net-enabled IT applications to build ability which depends on timely and ongoing reconfiguration of firms' resources to create customer value. Zahra and George (2002) extended Wheeler's research and emphasized the importance of inter-relationship between strategy, IS, and entrepreneurship for creating DC that enables firms to gain competitive advantage. Zhu and Kraemer (2002) used RBV and DC as complementary theories to measure e-commerce metrics and to examine the impact of e-commerce on firm performance in the manufacturing sector. Empirical IS studies have also applied DC into specific firm processes to evaluate IT-related value on business performance: such as IT leverage firm's competence in new product development process (Pavlou et al. 2006), information system and business strategic alignment process (Chen et al. 2008), and organizational learning process contributing to competitiveness and performance improvement (Bhatt et al. 2005).

Consistent with DC theory, we propose that e-business capability has dynamic features. Organizations using e-business practices continually reconfigure their internal and external resources to exploit and enhance their business opportunities to adapt to environmental changes. Thus, e-business capability represents dynamic characteristics of organizations as organizations engage routines, analytic processes, knowledge learning, and simple rules to turn e-business into value (Wheeler 2002, Bharadwaj et al. 2000, Sambamurthy et al. 2001). Applying DC in e-business context provides us with insights into how innovating firms develop their capability

to adapt and even capitalize on rapidly changing environments. DC also reflects organization's management ability to respond timely to external environment change, to do rapid and flexible production innovation, and to effectively coordinate and redeploy resources or competencies based on managerial and organizational processes market positions, and path dependencies (Bharadwaj 2000; Clark et al. 1997; Wheeler 2002).

We employ the TOE framework, RBV, and DC theories as a synergistic complementary to understand relationships among technology, organization and environment, the factors of which contribute to building and enhancing e-business capability, and to analyse how e-business capability creates value, and in what ways e-business value impacts on firm performance.

E-business Capability: A Business Process Perspective

E-business capability can be viewed as a firm's ability to deploy and leverage e-business resource to fulfil whole order cycle processes including information-gathering activities, order-taking activities, transaction activities, fulfilment activities and customer service activities (Zhu 2004). In the present study, we conceptualize e-business capability as a second-order construct, encompassing these four dimensions: communication, transaction, activity integration, and responsiveness to change. Each individual dimensions of e-business capability should be treated in a collective and mutually reinforcing manner rather than in isolation.

Communication

Communication refers to an ability to exchange effectively and efficiently knowledge both within firms and between trading partners (Wu et al. 2006). Effective Communication between cross-functional units and organizations in the value chain enhances intra- and inter-firm flexibility and reduces levels of conflict (Fredericks 2005; Wu et al. 2006). Sharing information needs a culture element that fosters such action (Lambert et al. 2000). Successful communication depends not only on sharing across departments and organizations but effective coordination, which in return brings value to firms (Fredericks 2005). Thus, effective communication is identified as one of the most fundamental abilities in the e-business process (Shore et al. 2003).

Transaction

Communication can lead to purchase or transactions, including order taking from websites, order tracking, and order payments (Zhu 2004). Hence, the second dimension of e-business capability is to facilitate online transactions.

Activity integration

Activity integration is achieved by firms at an inter-organizational level and across channel partners level (Wu et al. 2006). In the present study, we focus on integration between channel partners. Inter-firm technology integration and activity integration comprises a two-dimensional process. Activity integration is the extent to which firms coordinate their strategic channel activities, such as planning and forecasting with partners in the value chain while technology integration is the level of technology alignment with channel partners. A higher level of activity integration is a desired outcome of technology integration with channel partners. To make sure the value chain activity is automatically integrated after the deployment of technology integration, firms need to fundamentally shift the ways of doing business with channel partners from discrete transactions to continuous and consistent transactions in order to achieve activity integration with their partners (Wu et al. 2006). Therefore, the level of activity integration, rather than technology integration, is a sound indicator of firm e-business capability.

Responsiveness to environment change

Responsiveness is ability for firms to respond to environmental changes. Rapid responsiveness to environmental change can be regarded as a form of organizational learning, requiring reliable, efficient and collaborative responses not only from internal organization itself but also from related supply chain networks (Rogers et al. 1993; Wu et al. 2006). Thus, responsiveness represents the dynamic nature of e-business capability, enabling firms to develop and renew firm-specific competences, and to respond better to shifts in environments (Collis 1994; Teece et al. 1997; Wu et al. 2006).

Conceptual Model and Hypotheses Development

Technological context

Literature (Bharadwaj 2000; Mata et al. 1995) suggests that IS capability consists of infrastructure, human resources, and knowledge. Consistent with studies (Lin et al. 2008; Soto-Acosta et al. 2008; Zhu et al. 2005), technology context in this research contains IT infrastructure and IT expertise, where IT infrastructure refers to Internet-related technologies that provide a foundation for Internet-related businesses (Lin et al. 2008). IT expertise refers to IT professionals who possess the knowledge and skills to implement Internet-related

applications (Zhu et al. 2005). Empirical evidence demonstrates that firms that have sound IT infrastructure and IT expertise are more likely to develop e-business capability (Lin et al. 2008; Ravinchandran et al. 2005; Soto-Acosta et al. 2008; Zhu et al. 2005). Hence, we posit that:

H1a. IT infrastructure is related positively to e-business capability.

H1b. IT expertise is related positively to e-business capability.

Organizational context

To realize a business transformation from a traditional to e-business model, companies need to understand the complementary nature of technology, business processes, and e-business readiness throughout their value chains rather than putting excessive emphasis on technical aspects (Barua et al. 2001). Powell and Dent-Micallef (1997) concluded that interactions among IT and qualitative organizational variables enhance firm competitive advantage, subsequently influencing IT performance. Complementary human resources in this research include openness with the organization, top management commitment, and organizational flexibility. Literature relating to these three dimensions is discussed below.

Open organization. Open organization is the most frequent cultural variable linked with IT performance (Powell et al. 1997; Zhuang et al. 2006). Zuboff (1988) argued that the benefits of IT lay in their capability to release information throughout organizations, and that artificial cultural or structural constrictions negate IT value. Zhuang and Lederer (2006), Powell and Dent-Micallef (1997) stated that it is necessary for firms to embrace an open philosophy, allowing employees access to operating information traditionally controlled by upper management, repudiating traditional hierarchies, and top-down communication. To achieve performance advantages, firms should combine IT with its open culture. Hence, we posit that:

H2a. Open organization is related positively to e-business capability.

Top management commitment. E-business has become a core component of strategic planning process in many businesses. Top management attitude towards change has been shown to significantly influence e-business adoption and use decisions (Damanpour 1987; Dewar et al. 1986; Wu et al. 2003). Literature demonstrates that the role of top management in e-business context is significant because top management has a power to reduce interdepartmental conflict and facilitate rapid business implementation (Dess et al. 1987; Powell et al. 1997; Zhuang et al. 2006); and successful e-business adoption and use need top management financial support (Wu et al. 2003). Hence we posit that:

H2b. Top management commitment is related positively to e-business capability.

Organization flexibility. Unexpected changing markets, competitors, and technologies underscore an organization's need for flexibility. According to Zhuang and Lederer (2006), IT change processes affect every function and organizational stakeholders, requiring fluidity of coordination and organizational flexibility. IT usage requires adaptations not only in the outward manifestations of IT, but also with the respect to the behavioural repertoires of managers, technologists and IT users. Based on these views, we posit that:

H2c. Organization flexibility is related positively to e-business capability.

Environmental context

We examine two aspects of environmental context: customer power and competitive pressure.

Customer power. Customer power refers to exogenous customer demands on the business to implement certain practices (Wu et al. 2003). A number of investigators (Christensen et al. 1996; Foster 1986; Wu et al. 2003) state that customer power subsequently influences firms investment in adoption and use of new technologies. Owing to the emergence of Internet technology, customers can order online and track orders via electronic ally. Powerful customers have search capabilities for more convenient services and lower transaction costs. Thus, increased customer power is forcing companies to use new technologies that streamline communication processes in order to meet and to satisfy customer needs. Hence, we posit that:

H3a. Customer power is related positively to e-business capability.

Competitive pressure. Competitive pressure refers to the degree of pressure that companies experience from competitors within the industry (Zhu et al. 2005). Competitive pressure can be an innovation-diffusion driver for firms to adopt a new innovation (Porter et al. 1985). The use of e-business by competitors may induce changes to industry structures and new competition methods, changing competition rules through lock-ins (Shapiro et al. 1999), electronic integration (Venkatraman et al. 1990), and brick-and-click synergies (Steinfeld et al. 2002). These, in return, can exert pressure on firms to conform to using e-business in accelerating business process. Thus, competitive pressure plays a significant role in pushing firms towards e-business use.

H3b. Competitive pressure is related positively to e-business capability.

E-business Capability and E-business Value

Drawing upon RBV and DC theories, this research explains the interconnectivity between e-business capability and value using a process approach. E-business capability requires a wide range of knowledge integration and is harder to achieve and to be imitated by competitors (Collis 1994; Grant 1996). Thus, e-business capability is a valuable source of sustained competitive advantage (Barney 1991). Recently, a number of notable studies (Devaraj et al. 2007; Ravinchandran et al. 2005; Wu et al. 2006; Zhu 2004; Zhu et al. 2005) demonstrate that by enhancing e-business use and capability along the value chain, it is possible for e-business to generate value, which has positive impacts on firm performance such as sales performance (Wu et al. 2003; Zhu et al. 2005), operational efficiency (Devaraj et al. 2007; Ravinchandran et al. 2005; Zhu et al. 2005), and relationship development (Wu et al. 2003). Accordingly, we posit that:

H4a, b, c. E-business capability is related positively to e-business value in terms of sales performance, operational efficiency and relationship development.

Figure 1 displays the proposed research model, showing the interrelationships between TOE contexts, e-business capability and e-business value, as well as the proposed hypotheses.

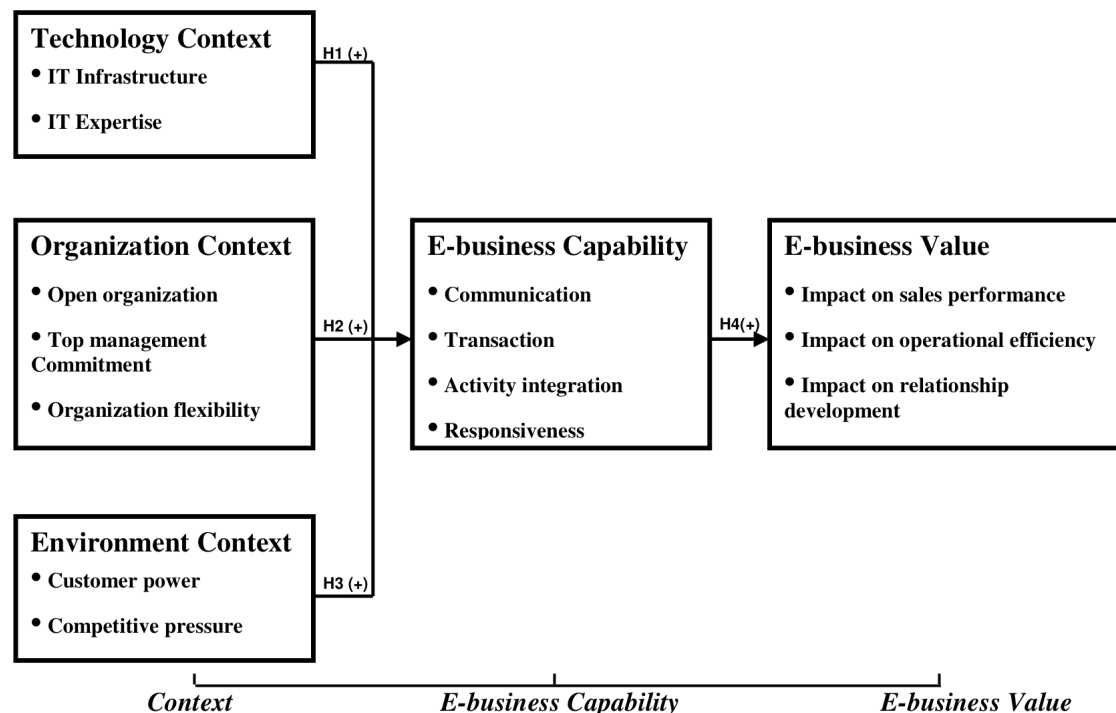


Figure 1: The proposed research model

RESEARCH METHOD

Data Collection and Instrument Development

A random sample of 1,500 Australian SMEs was selected from Business Review Weekly (BRW) Fast 100 and Fast Starters research. Firms are categorized by industry sector using the Australian and New Zealand Standard Industrial Classification (ANZSIC) criteria developed by the Australian Bureau of Statistics (ABS), containing 16 categories (ABS 1983). CEOs and/or founders of the companies are key informants. An online survey will be used to collect data. An instrument based on the literature will be developed to tap data relating to the five broad areas identified in the proposed research model (Figure 1).

Statistical Procedure

SPSS&AMOS software packages will be used to carry out the analysis. SPSS will be used to compute exploratory factor analysis (EFA). AMOS will be employed to undertake confirmatory factor analyses (CFA), to validate factor loadings identified in EFA, and to test a full structural model and related hypotheses. Constructs' reliability and validity will also be examined.

LIMITATIONS AND FUTURE RESEARCH

First, using a single key informant (CEO and/or founder) presents as a limitation. Future study should use multiple sources of informants not only for exploring the complexity of relationships between variables but also

for strengthening the reliability and validity of findings. Second, because our data set is cross-sectional in nature, we can only test relationships among stages and factors. Future research could use more comprehensive, longitudinal data or in depth case studies over time to test model.

CONCLUSIONS AND IMPLICATIONS

This paper develops a conceptualized model and contributes to the existing body of knowledge in several ways. First, it uses three theories: TOE, RBV, and DC as a synergistic complimentary to better understand relationships between technology, organization, environment and e-business capability and e-business value. Second, it enhances our understanding of how organizations build and enhance their e-business capability to adapt to external environment and market changes by exploring factors within technology, organization, and environment contexts. Finally, by using a process-oriented approach, we propose that e-business capability has dynamic features consisting of four dimensions: communication with partners and customers, activity integration with partners, transactions, and responsiveness to market changes.

This study also offers several implications for managers. First, our study provides managers with a framework to better understand how IT investments link to business value by building up e-business capability. Second, managers should be aware that the complementary resources within the organization such as the flexible IT infrastructure, good business strategy, top management commitment to e-business, and open organization communication are value-generated assets that will lead to improved business performance in the long-term. Finally, managers should bear in mind that e-business capability has a dynamic nature. Firms should proactively develop managerial skills to increase their agility in order to quickly respond to market change.

REFERENCES

- ABS *Australian standard industrial classification* Canberra: Australian Government Publishing Service, 1983.
- Abu-Musa, A.A. "Auditing e-business: new challenges for external auditors," *Journal of American Academy of Business* (4:1) 2004, pp 28-41.
- Amit, R., and Schoemaker, P.J.H. "Strategic assets and organizational rent," *Strategic Management Journal* (14:1) 1993, p 33.
- Banker, R.D., Bardhan, I.R., Hsui, C., and Shu, L. "PLANT INFORMATION SYSTEMS, MANUFACTURING CAPABILITIES, AND PLANT PERFORMANCE," *MIS Quarterly* (30:2), 06 2006, pp 315-337.
- Barney, J.B. "Organizational culture: can it be a source of sustained competitive advantage," *Academy of Management Review* (11:3), July 1986, pp 656-665.
- Barney, J.B. "Firm Resources and Sustained Competitive Advantage," *Journal of Management* (17:1) 1991, pp 99-120.
- Barua, A., Konana, P., Whinston, A.B., and Yin, F. "Driving E-Business Excellence," *MIT Sloan Management Review* (Fall) 2001, pp 36-44.
- Bharadwaj, A.S. "A resource-based perspective on information technology capability and firm performance: an empirical investigation " *MIS Quarterly* (24:1) 2000, pp 169-196.
- Bhatt, G.D., and Grover, V. "Types of Information Technology Capabilities and Their Role in Competitive Advantage: An Empirical Study," *Journal of Management Information Systems* (22:2), Fall 2005, pp 253-277.
- Chan, Y. "IT value: the great divide between Qualitative and Quantitative and individual and organization measures," *Journal of Management Information Systems* (16:4) 2000, pp 225-261.
- Chau, P.Y.K., and Tam, K.Y. "Factors Affecting the Adoption of Open Systems: An Exploratory Study," *MIS Quarterly* (21:1), 03 1997, pp 1-24.
- Chen, M.-C., Yang, T., and Li, H.-C. "Evaluating the supply chain performance of IT-based inter-enterprise collaboration," *Information & Management* (44:6) 2007, pp 524-534.
- Chen, R.-S., Sun, C.-M., Helms, M.M., and Jih, W.-J. "Aligning information technology and business strategy with a dynamic capabilities perspective: A longitudinal study of a Taiwanese Semiconductor Company," *International Journal of Information Management* (28:5) 2008, pp 366-378.
- Christensen, C.M., and Joseph, L.B. "Customer power, strategic investment, and the failure of leading firms " *Strategic Management Journal* (17:3) 1996, pp 197-218.
- Clark, C.E., Cavanaugh, N.C., Brown, C.V., and Sambamurthy, V. "Building change-readiness capabilities in the IS organization: Insights from the Bell Atlantic Experience," *MIS Quarterly* (21:4) 1997, pp 425-455.
- Clemons, E.K., and Row, M.C. "Sustaining IT advantage: The role of structural differences," *MIS Quarterly* (15:3) 1991, pp 275-292.
- Collis, D.J. "Research note: How valuable are organizational capabilities?," *Strategic Management Journal* (15) 1994, pp 143-152.

- Damanpour, F. "The adoption of technological, administrative, and ancillary innovations: Impact of organizational Factors," *Journal of Management* (13) 1987, pp 675-688.
- Dess, G.G., and Nancy, O. "Environment, structure, and consensus in strategy formulation: A conceptual integration," *Academy of Management Review* (12) 1987, pp 313-330.
- Devaraj, S., and Kohli, R. "Performance Impacts of Information Technology: Is Actual Usage the Missing Link?," *Management Science* (49:3), 03 2003, pp 273-289.
- Devaraj, S., Krajewski, L., and Wei, J.C. "Impact of eBusiness technologies on operational performance: The role of production information integration in the supply chain," *Journal of Operations Management* (In Press, Corrected Proof) 2007.
- Dewar, R.D., and Jane, E.D. "The adoption of radical and incremental innovations: An incremental analysis," *Management Science* (32(November)) 1986, pp 1422-1433.
- Eisenhardt, K.M., and Martin, J.A. "Dynamic capabilities: What are they?," *Strategic Management Journal* (21:10/11) 2000, p 1105.
- Elia, E., Lefebvre, L., and Lefebvre, E. "Focus of B-to-B e-commerce initiatives and related benefits in manufacturing small- and medium-sized enterprises," *Information Systems and eBusiness Management* (5:1) 2007, p 1.
- Foster, R.N. *Innovation: The Attacker's Advantage*, New York: Summit Books, 1986.
- Fredericks, E. "Influsing flexibility into business-to-business firms: a contingency theory and resource-based view perspective and practical implications," *Industrial Marketing Management* (34) 2005, pp 555-565.
- Grant, R.M. "Toward a knowledge-based theory of the firm," *Strategic Management Journal* (17) 1996, pp 109-122.
- Iacovou, C.L., Benbasat, I., and Dexter, A.S. "Electronic Data Interchange and Small Organizations: Adoption and Impact of Technology," *MIS Quarterly* (19:4), 12 1995, pp 465-485.
- Ives, B. "Editor's comment: probing the productivity paradox," *MIS Quarterly* (18:2) 1994, pp xxi-xxiv.
- Kauffman, R., and Walden, E. "Economics and electronic commerce: Survey and directions for research," *International Journal of Electronic Commerce* (5:4) Summer 2001, pp 5-116.
- Kearns, G.S. "Alignment of Information Systems Strategy with Business Strategy: Impact on The Use of IS For Competitive Advantage," in: *The Graduate School*, University of Kentucky, Kentucky, 1997, pp. 1-281.
- Kearns, G.S., and Sabherwal, R. "Strategic Alignment Between Business and Information Technology: A Knowledge-Based View of Behaviors, Outcome, and Consequences," *Journal of Management Information Systems* (23:3), 12 2006, pp 129-162.
- Kowtha, N., and Choon, T. "Determinants of Website development: a study of electronic commerce in Singapore," *Information & Management* (39:3) 2001, pp 227-252.
- Kuan, K.K.Y., and Chau, P.Y.K. "A perception-based model for EDI adoption in small businesses using a technology-organization-environment framework," *Information & Management* (38:8) 2001, pp 507-521.
- Lambert, D., and Cooper, M.C. "Issues in supply chain management," *Industrial Marketing Management* (29) 2000, pp 65-83.
- Lee, H.L., and Whang, S. "Winning the Last Mile of E-Commerce," *MIT Sloan Management Review* (42:4) 2001 p 54.
- Lin, H.F., and Lin, S.M. "Determinants of e-business diffusion: A test of the technology diffusion perspective," *Technovation* (28) 2008, pp 135-145.
- Makadok, R. "Toward a synthesis of the Resource-Based and Dynamic-Capability views of rent creation," *Strategic Management Journal* (22:5) 2001, pp 387-401.
- Mata, F.J., Fuerst, W.L., and Barney, J.B. "Information Technology and Sustained Competitive Advantage: A Resource-Based Analysis," *MIS Quarterly* (19:4), 12 1995, pp 487-505.
- Oh, W., and Pinsonneault, A. "On the assessment of the strategic value of information technologies: conceptual and analytical approaches," *MIS Quarterly* (31:2) 2007, pp 239-265.
- Pavlou, P.A., and Sawy, O.M.E. "From IT Leveraging Competence to Competitive Advantage in Turbulent Environments: The Case of New Product Development," *Information Systems Research* (17:3) 2006, p 198.
- Porter, M., and Millar, V. "How information gives you competitive advantage," *Harvard Business Review* (63:4) 1985, pp 149-160.
- Powell, T.C., and Dent-Micallef, A. "Information technology as competitive advantage: the role of human, business and technology resources.," *Strategic Management Journal* (18:5) 1997, pp 375-405.
- Priem, R.L., and Butler, J.E. "IS THE RESOURCE-BASED "VIEW" A USEFUL PERSPECTIVE FOR STRATEGIC MANAGEMENT RESEARCH?," *Academy of Management Review* (26:1), 01 2001a, pp 22-40.

- Priem, R.L., and Butler, J.E. "TAUTOLOGY IN THE RESOURCE-BASED VIEW AND THE IMPLICATIONS OF EXTERNALLY DETERMINED RESOURCE VALUE: FURTHER COMMENTS," *Academy of Management Review* (26:1), 01 2001b, pp 57-66.
- Ravinchandran, T., and Lertwongsatien, C. "Effect of Information Systems Resources and Capabilities on Firm Performance: A Resource-Based Perspective," *Journal of Management Information Systems* (21:4), Spring 2005, pp 237-276.
- Raymond, L., and Bergeron, F. "Enabling the business strategy of SMEs through e-business capabilities: A strategic alignment perspective," *Industrial Management & Data* (108:5) 2008, pp 577-595.
- Rogers, D.S., Daugherty, P.J., and Stank, T.P. "Enhancing service responsiveness: The strategic potential of EDI," *Logistics Information Management* (6:3) 1993, pp 27-32.
- Sanchez, R., Heene, A., and Thomas, H. *Introduction: Towards the theory and practice of competence-based competition* Pergamon Press, Oxford, 1996.
- Sanders, N.R. "An empirical study of the impact of e-business technologies on organizational collaboration and performance," *Journal of Operations Management* (25) 2007, pp 1332-1347.
- Santhanam, R., and Hartono, E. "Issues in linking information technology capability to firm performance," *MIS Quarterly* (27:1) 2003, pp 125-153.
- Shapiro, C., and Varian, H. *Information Rules: A Strategic Guide to the Network Economy* Harvard Business School Press, Boston, MA, 1999.
- Shore, B., and Venkatachalam, A.R. "Evaluating the information sharing capabilities of supply chain partners: A fuzzy logic model," *International Journal of Physical Distribution & Logistics Management* (33:9/10) 2003, pp 804-824.
- Soto-Acosta, P., and Merono-Cerdan, A.L. "Analyzing e-business value creation from a resource-based perspective," *International Journal of Information Management* (In Press, Corrected Proof) 2008.
- Srivastava, R.K., Shervani, T.A., and Fahey, L. "Market-based assets and shareholder value: a framework for analysis," *Journal of Marketing* (January) 1998, pp 2-18.
- Steinfeld, C., Adelaar, T., and Lai, Y. "Integrating brick and mortar locations with e-commerce: Understanding synergy opportunities," *Proceedings Hawaii International Conference System Sci*, Big Island, Hawaii, 2002.
- Straub, D.W., Hoffman, D.L., Weber, B.W., and Steinfield, C. "Toward New Metrics for Net-Enhanced Organizations," *Information Systems Research* (13:3), 09 2002, pp 227-238.
- Teece, D.J., Pisano, G., and Shuen, A. "Dynamic capabilities and strategic management," *Strategic Management Journal* (18:7) 1997, pp 509-533.
- Teo, T.S.H., Ranganathan, C., and Dhaliwal, J. "Key dimensions of inhibitors for the deployment of web-based business-to-business electronic commerce," *IEEE Transactions on Engineering Management* (53:3) 2006, pp 395-411.
- Thong, J.Y.L. "An Integrated Model of Information Systems Adoption in Small Businesses," *Journal of Management Information Systems* (15:4), Spring 1999, pp 187-214.
- Tornatzky, L.G., and Fleischer, M. *The Process of Technological Innovation*, Lexington, MA, 1990.
- Venkatraman, N., and Zaheer, A. "Electronic integration and strategic advantage: A quasi-experimental study in the insurance industry," *Information Systems Research* (1:4) 1990, pp 377-393.
- Wade, M., and Hulland, J. "Review: The Resource-Based View and Information Systems Research: Review, Extension, and Suggestions for Future Research," *MIS Quarterly* (28:1) 2004, pp 107-142.
- Wang, C.L., and Ahmed, P.K. "Dynamic capabilities: A review and research agenda," *International Journal of Management Reviews* (9:1), 03 2007, pp 31-51.
- Wernerfelt, B. "A resource-based view of the firm," *Strategic Management Journal* (5:2) 1984, pp 171-180.
- Wheeler, B.C. "A dynamic capabilities theory for assessing Net-enablement," *Information Systems Research* (13:2) 2002, pp 125-146.
- Wu, F., Mahajan, V., and Balasubramanian, S. "An Analysis of E-Business Adoption and Its Impact on Business Performance," *Journal Of Academy of Marketing Science* (31:4) 2003, pp 425-447.
- Wu, F., Yenyurt, S., Kim, D., and Cavusgil, S.T. "The impact of information technology on supply chain capabilities and firm performance: A resource-based view," *Industrial Marketing Management* (35:4) 2006, pp 493-504.
- Yang, S.M., Yang, M.H., and Wu, J.B. "The impacts of establishing enterprise information portals on e-business performance," *Industrial and Management and Data systems* (105:3) 2005, pp 349-368.
- Zahra, S.A., and George, G. "The Net-Enabled Business Innovation Cycle and the Evolution of Dynamic Capabilities," *Information Systems Research* (13:2), 06 2002, pp 147-150.
- Zhu, K. "The Complementarity of Information Technology Infrastructure and E-Commerce Capability: A Resource-Based Assessment of Their Business Value," *Journal of Management Information Systems* (21:1), Summer 2004, pp 167-202.

- Zhu, K., and Kraemer, K.L. "e-Commerce Metrics for Net-Enhanced Organizations: Assessing the Value of e-Commerce to Firm Performance in the Manufacturing Sector," *Information Systems Research* (13:3), 09 2002, pp 275-295.
- Zhu, K., and Kraemer, K.L. "Post-adoption variations in usage and value of e-business by organizations: cross-country evidence from the retail industry," *Information Systems Research* (16:1) 2005, pp 61-84.
- Zhu, K., Kraemer, K.L., Xu, S., and Dedrick, J. "Information Technology Payoff in E-Business Environments: An International Perspective on Value Creation of E-Business in the Financial Services Industry," *Journal of Management Information Systems* (21:1), Summer 2004, pp 17-54.
- Zhuang, Y.L., and Lederer, A.L. "A resource-based view of electronic commerce," *Information & Management* (43) 2006, pp 251-261.
- Zuboff, S. *In The Age of the Smart Machine* Basic Books, New York, 1988.

COPYRIGHT

Bi and Smyrnios © 2009. The authors assign to ACIS and educational and non-profit institutions a non-exclusive licence to use this document for personal use and in courses of instruction provided that the article is used in full and this copyright statement is reproduced. The authors also grant a non-exclusive licence to ACIS to publish this document in full in the Conference Papers and Proceedings. Those documents may be published on the World Wide Web, CD-ROM, in printed form, and on mirror sites on the World Wide Web. Any other usage is prohibited without the express permission of the authors.